Urban Prototyping

Using LEGOs and Parametric Modeling for Designing Cities

A City Science Workshop

Course Description– The world is experiencing a period of extreme urbanization. In China alone, 300 million rural inhabitants will move to urban areas over the next 15 years. This will require building new infrastructure to accommodate the equivalent of the current population of the United States in a matter of a few decades. It is a global imperative to develop systems that improve livability while dramatically reducing resource consumption. This workshop will explore the complex and interdependent nature of housing, mobility, energy, and food production systems for high-density cities.

Student Deliverables–Students will explore urban systems at both the neighborhood scale (~1km²) and the block scale. Participants will develop a process for understanding and resolving a set interdependent urban parameters including building massing, space use, shared mobility networks, streetscape types, parks, urban food production, and energy generation nodes. Students may elect to work with either 3D physical models using color-coded LEGO bricks as an abstract framework, or parametric computation software such as Grasshopper. Precedents from existing cities and current urban theory will be used to inform the development of urban strategies that maximize livability and positive human interaction while minimizing the consumption of resources.

Research Areas– Electric Mobility Ecosystems, Resilient Energy Systems, Transformable CityHomes, Urban Food Systems, and Streetscapes for Compact Urban Cells.

Date, Time & Location – The workshop will meet on Tuesday and Thursdays from 130-430pm for three weeks in January (8th, 10th, 15th, 17th, 22nd, 24th) and will meet in E15-368.

Enrollment – The workshop is open to the entire MIT community based on a first come first serve basis. The class size is limited to 20 students due to number of Lego sets available to instructors.
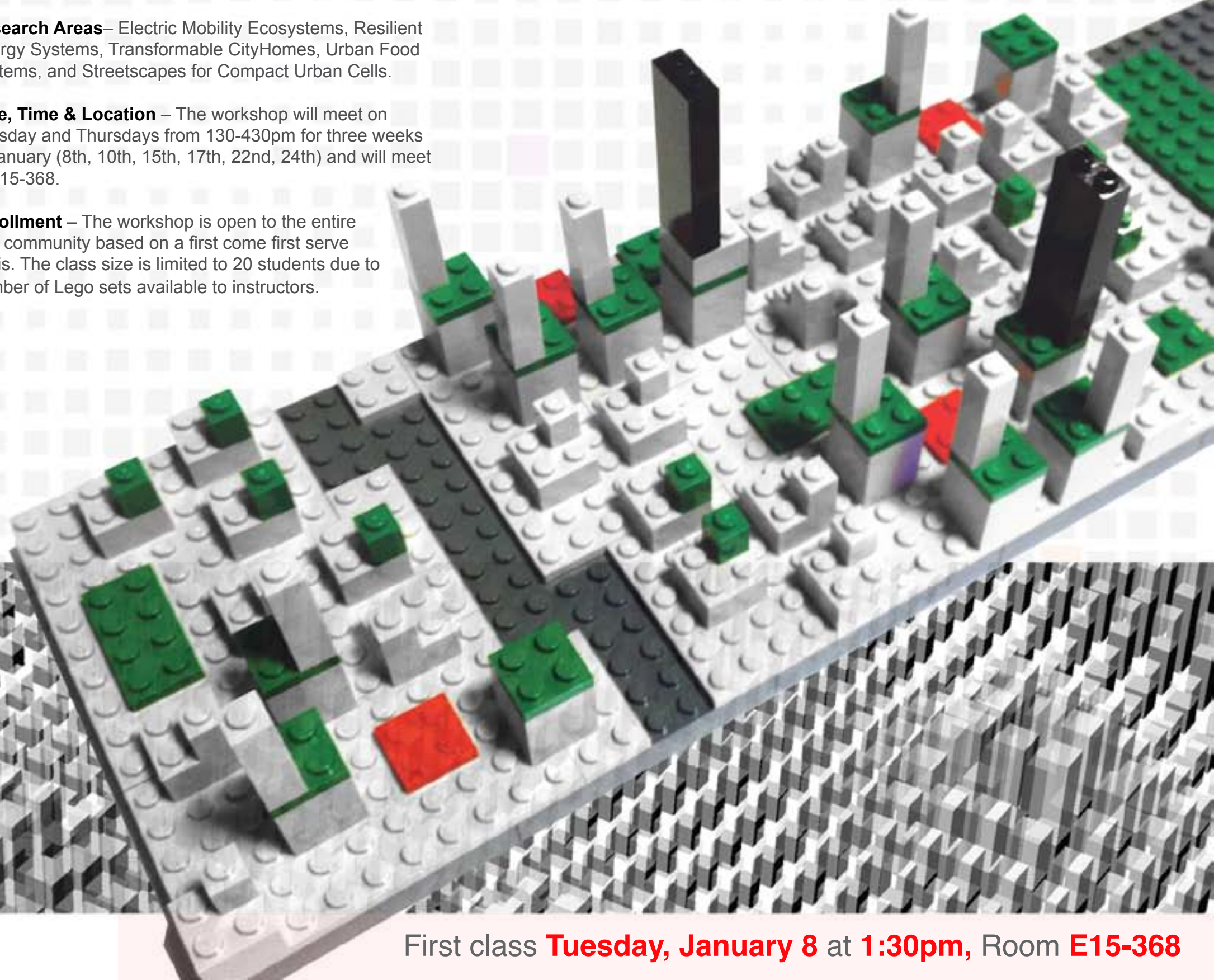
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First class **Tuesday, January 8** at **1:30pm,** Room **E15-368**